

in the Circular submitted by the Council with their letter of application to the Committee of May 23, with power to arrange for a zoological station, and with a recommendation that an application be made to Government for assistance. The sum granted is upwards of 1500*l*.

The results already obtained by the Scottish Meteorological Society in connection with the herring fishery show a close relation between the fluctuations of the catches and changes of temperature, wind, sunshine, cloud, thunder, and other weather phenomena. Thus the observations show, for the six years ending with 1878, that a low temperature is attended with large catches, and a high temperature with small catches. Good catches are also had when the temperature fluctuates about the average, and high temperatures, if short continued, scarcely diminish the catches. So far as the discussion of the observations has gone, it appears that the maximum catches are made when the temperature of the sea is about 55°5, but this point requires further investigation. Thunderstorms, if widespread, are followed for some days with small catches over the region covered by them.

The Council has hitherto been unable, from want of funds, to complete the discussion of the observations already made; to inspect the fishing districts and confer with the fishermen, and thereby secure observations of the fulness and exactness which are required; and to carry on certain investigations in physics and in natural history which are essential to this inquiry. Of the physical investigations may be mentioned the heating power of the sun's rays at different depths of the sea, which appears to have important bearings, directly and indirectly, on the depth at which the herrings are caught. The inquiries in natural history are mainly those which concern the food of the herring and also the food of the animals on which the herrings prey, together with the influence of weather and season on the distribution of these animals in the sea. In carrying out the latter inquiries, the fishermen would be invited to assist, by entering, in schedules prepared for the purpose, observations as to the colour and appearances of the sea-water, due to the presence of minute organisms. As regards the discussion, it will be necessary to make weather maps of Scotland for each day of the fishing seasons—say upwards of 500—in which special prominence is given to charting the temperature, wind, cloud, thunder, and the other elements of weather which affect the fishings,—together with the catch of each day entered on the positions of the maps where they were severally made round the coast. From these maps some of the causes which tend to localise the shoals will become apparent.

The desiderata at present requiring to be supplied in carrying on the investigation of sea and river fishing are these:—1. Fuller and more exact observations of the temperature of the sea at the surface, and at different depths, by the fishermen at the fishing grounds. 2. The resumption of continuous maximum and minimum temperature observations at Peterhead, and the establishment of similar observations at other points round the coast. 3. The observation of maximum and minimum temperatures in other of the more important salmon rivers. 4. Daily temperature of the sea, by boat at some distance from land, at about six selected places. 5. The discussion of past observations, particularly of the herring fishings as described above. 6. Assistance of specialists in carrying on investigations into the food of the herrings, and into the heating power of the sun's rays at different depths.

We are glad to think that with the surplus funds of the Edinburgh Fisheries Exhibition, so wisely disposed of, the Scottish Meteorological Society will be able to prosecute their researches on these points with some hope of a satisfactory result.

NOTES

THE mathematical papers and memoirs of the late Prof. Henry Smith are, we believe, to be collected, and published in two volumes quarto by the Press of his own University. Miss Smith will contribute a biographical introduction; and the general editorship of the work, which will include a considerable quantity of hitherto unpublished material, will be intrusted to Mr. J. W. L. Glaisher.

IN NATURE for February 1 we gave a brief account of the remarkable results obtained by Prof. Lemström with his network of wires arranged up the face of the mountain at his station at Sodankylä, in North Finland. By this means he succeeded in procuring an appearance exactly similar to that of the aurora borealis. In connection with these experiments Mr. G. A. Rowell, assistant in the Natural History Department at Oxford, has issued a circular calling attention to the suggestion made by him forty years ago in reference to similar experiments. "My views on the cause of auroræ," Mr. Rowell states, "are that they result from electricity carried over with vapour by the superior trade-winds, from tropical to polar regions, and its occasional accumulation in the latter to such a degree as to flash back to lower latitudes, through the atmosphere at a reduced density, but still within the regions at which vapour is flatable although in a frozen condition. The directive properties of the magnetic needle I attribute to the return current of electricity from polar to tropical regions. The following is the concluding paragraph of the report on my paper on this subject:—'The author supports his opinion by general reference to the observations on the aurora, &c., in the appendix to Capt. Franklin's "Journey to the Polar Seas," and concludes with proposing the experiments of raising electrical conductors to the height of the clouds in the *frigid regions during the frosts in winter*, which in his opinion would cause the aurora to be exhibited and lead to important discoveries in the science of magnetism.'"—(*Report of the British Association, 1840, Transactions of the Sections, p. 49.*)

DURING the past winter, the weather in Shetland and the north has been more stormy than for a number of years. In evidence of the severity of the weather, the inhabitants of the Island of Foula, which lies about eighteen miles to the west of Shetland were only able last week for the first time this year to cross to the mainland in their boats. The large supplies of food laid in, as is usually done, were in many cases exhausted, and several families were only saved from starvation by help received from neighbours who were better supplied.

ARRANGEMENTS have been completed for an exhibition, on an important scale, of hygienic dress, sanitary appliances, and household decoration, under Royal and distinguished patronage, and under the direction of the National Health Society, at Humphreys' Hall, Knightsbridge. The exhibition will be opened on June 2 next. The exhibits will be divided into seven classes, and besides hygienic, rational, and artistic dress, will include food-products, appliances for the sick-room, home nursing and home education, industrial dwelling and cottage hygiene, the sanitation of the house and hygienic decoration, heating, lighting, and cooking apparatus, fuel, &c. The Superintendent is Mr. E. J. Powell, 44, Berners Street, W.

THE National Smoke Abatement Institution is making arrangements for opening a permanent exhibition in a central part of London in an extensive range of buildings, for the display of apparatus, fuels, and systems of heating, combining economy with the prevention of smoke, and the best methods of ventilating and lighting. The exhibition will be free to the public, and will include examples of all the most recent inventions and improved apparatus. A lecture hall for the reading of papers, and instruction classes will be provided; also testing rooms under the

supervision of experts, for the purpose of continuing the series of tests and trials commenced in connection with the South Kensington and Manchester Smoke Abatement Exhibitions of 1882. Particulars may be obtained at the offices of the National Smoke Abatement Institution, 44, Berners Street, Oxford Street, London, W.

THE Executive Committee of the International Fisheries Exhibition have come to a decision to light their galleries by electricity, and they have already made arrangements for the illumination of fully two-thirds of the area. Messrs. Davey Paxman and Co. have undertaken to supply the necessary motive power, which has been estimated at little less than 700 horse-power.

THE International Medical Congress, which, in accordance with the resolutions of the Italian Congress of last year, is to be held this year in Holland, will take place at Amsterdam, during the Colonial Exhibition, from September 6 to 8 next.

WE have on good authority the following instance of the liberality of Dr. Oscar Dickson, who has contributed so largely to the various expeditions of Baron Nordenskjöld:—An energetic Swedish botanist, Sven Berggren, was some years ago engaged in studying the flora of New Zealand, of which he gave some account in the Swedish *Aftonblad*. In one of his letters he stated, however, that his studies would have to be discontinued from want of funds. The next day a sum of 1000*l.* was received anonymously by the *Aftonblad*, with instructions to forward it to Herr Berggren. It was only many years after that it leaked out that the generous donor was Dr. Oscar Dickson.

PART IV. of Mr. Distant's "Rhopalocera Malayana" appeared this week. A complete synoptical key is given to the genera, and the geographical distribution of the genera and species is fully described. An attempt is made to allude to all biological facts which can illustrate or explain the many complexities in the distribution and economy of Malayan butterflies, and to draw attention to the different theories which have been promulgated to account for the same. The work may thus prove useful as an introduction to the study of Rhopalocera. Already it has assumed much larger proportions than estimated owing to the number of additional species recently received or found in other collections. Woodcuts have also been given, and the plates are equal to anything yet produced by chromolithography. Mr. Distant's work deserves every encouragement.

AN International Congress for the Protection of Animals is to be held at Vienna in September next. A great number of local societies, such as those of Berlin, Cologne, Munich, Dresden, Hanover, &c., besides several Spanish, Italian, and Russian, have expressed their intention of being represented at the Congress. Anti-vivisectionist societies will not be invited, as the promoters of the Congress, eminent men of science, do not consider them as societies for the protection of animals, and hold them to be generally incompetent regarding questions relating to such protection.

THE Dutch press considers the demand made by Baron Nordenskjöld perfectly legitimate and just.

THE death is announced of Dr. Bertillon, the well-known French anthropologist and statistician.

AT its January meeting, the Russian Chemical and Physical Society awarded its Sokoloff premium to Prof. Menshutkin, for his researches into the influence of isomerism of alcohols and acids on the formation of compound ethers.

IT is interesting to examine the items in the budget of Norway for the ensuing year, which has just been issued, relating to the "extraordinary" grants made in that country for the benefit of science. The following are some of the donations for this year:

—To the academies of science in Christiania and Thronhjelm, 600*l.*; the museums of Bergen, Stavanger, and Tromsø, 900*l.*; travels of scientific students abroad, 350*l.*; the European geodetic commission, 400*l.*; international observations of the physical condition of the polar regions, 700*l.*; *Archiv* of mathematics and natural sciences, 70*l.*; other scientific journals, 130*l.*; a new natural history journal, 70*l.*; "further," towards the publication of the works of the distinguished Norwegian mathematician, Abel, 100*l.*; a work by Herr Norman on the Arctic flora of Norway, 350*l.*; Herr Tromholt for the study of the aurora borealis, 60*l.*; the *Acta mathematica*, 60*l.*; scientific study of the Norwegian sea fisheries, 300*l.*; for the artificial hatching of salmon ova, 90*l.*; geological researches of Southern Norway, 600*l.*; the society for promoting the Norwegian fisheries in Bergen, 1600*l.*; publication of the reports of the North Atlantic expedition, 100*l.* These amounts, as well as the 3000*l.* granted towards the expenses of the Fishery Exhibition in London, are all in addition to the ordinary subsidies of the year.

THE Swedish Government has granted a sum of 60*l.*, for this year, to an entomologist, whose duty it will be to advise farmers as to the best means of destroying injurious insects.

WE are informed by the secretary of the Society of Telegraph Engineers and of Electricians that the Crown Prince of Austria has consented to become patron of the Vienna Electrical Exhibition, and that the Emperor has signified his intention of devoting some highly decorated rooms for the purpose of testing the effects of incandescent lighting in connection with various styles of decoration. The time fixed for the receipt of applications for space has been extended from the 1st to the 20th inst., by which latter date they should be in the hands of the Secretary of the Society, 4, The Sanctuary, Westminster. We are also authorised to state that the Committee at Vienna are making arrangements for a reduction in the rates of transit on all goods forwarded to Vienna for exhibition.

IT is a common belief among persons who keep poultry that the shocks and tremors to which eggs are subject during transport on road or railway affect the germ contained in the egg. M. Dareste, who has been studying this matter (*Comptes Rendus*), found, a few years ago, that in eggs submitted to incubation directly after a railway journey, the embryo very generally died; but a few days' rest before incubation obviated this. He has lately inquired into the effect of shocks on the fecundated egg-germ, with the aid of a *lapoteuse*, or machine used by chocolate-makers to force the paste into the mills; it gives 120 blows a minute. Monstrosities were always the result of the tremors so caused. This teratogenic cause is the more remarkable that it acts before the evolution of the embryo; whereas the other causes M. Dareste has indicated, as elevation or lowering of temperature, diminution of porosity of the eggshell, the vertical position of the egg, and unequal heating, only modify the embryo during its evolution. The modification impressed on the germ by those shocks did not disappear after rest, as in the case mentioned above; but it is not known why. A few eggs escape the action.

THE radiometer is an instrument which may render good service in the hands of the teacher. Prof. Rovelli has been showing this (*Riv. Sci. Ind.*), and among other experiments he suggests are these:—Placing the instrument at the focus of a parabolic mirror, while a mass of snow is put at the focus of a like mirror facing the first a little way off; placing it, with sulphuric ether, under the bell-jar of an air-pump, and exhausting, afterwards letting in the air (the motion is opposite after the air is admitted); exposing the radiometer at the focus of a parabolic mirror turned towards the weak light reflected from snow, on a cloudy day, then turning the mirror away from the snow. Prof.

Rovelli finds that 8° of dark heat neutralise the effect of the weak light emitted by a common candle at the distance of 45 centimetres from the radiometer. The instrument may serve advantageously to demonstrate the relation between the absorptive and the emissive power of bodies, and to determine their respective values.

M. FERRY, the new Premier in the French Cabinet, as well as Minister for Public Instruction, will deliver the usual address to the Congrès des Sociétés Savantes at the end of this month.

M. HOUZEAU, the director of the Brussels Observatory, has returned from San José, but has obtained leave from his Government, and will spend the remaining part of the winter at Cannes. The King of Belgium is anxious to have the Observatory transferred to Laeken, to an eligible site placed in the vicinity of his castle, but nothing is decided in that respect. A temporary shed has been erected for the new meridian circle by Repsold, but the readings are taken with the old one.

M. SHULACHENKO, who managed the Russian military telegraph during the Kulja expedition, communicates to the Russian Physical Society the following results of his experiments with Siemens' telephones:—At a distance of 93 miles, music, singing, and speaking were heard quite distinctly; at 130 miles, conversation was difficult,—it was necessary to shout loudly, and those who received messages had to display a great sensibility of ear; but it was possible to have conversation even at a distance of 212 miles. When six pairs of telephones were put side by side, having each its wire, and the wires not being connected with one another, the conversation on one of them was heard on all the others. When the connecting wire of one pair of telephones was broken, the conversation on this pair was heard on the next pair of telephones the wire of which was in good state.

A COMMEMORATIVE stone has been placed on the house No. 17 in Via Dei Prefetti, Rome, to Morse, the telegraphist. The inscription was as follows, translated into English:—"Samuel Finkeze Breese Morse inhabited this house from 20th February, 1830, to January, 1831, inventor of the writing electromagnetic telegraph. He was born at Charlestown 27th April, 1791; died at New York 2d April, 1872."

THE last number of the *Izvestia* of the Russian Geographical Society gives interesting particulars of the naphtha-wells in the province of Ferghana, in Turkistan. There are no less than 200 wells which are situated at the foot of both mountain ridges that inclose the valley of Ferghana. One range of wells, twenty-seven miles long, is situated on both banks of the Naryn, twenty miles north of Namangan. The other, about sixty-five miles long, is situated in the latitude of Makhram, in the districts of Marghilan and Kokan. There is a third intermediate group some thirty miles east of Andijan. The wells are situated in the limestones and slates of the "Ferghana level" of the chalk formation. The specific weight of the Ferghana naphtha is 0.950 at 17° Cels., 0.9517 at 28° , and 0.945 at 43° ; it belongs therefore to the heavy mineral oils. The heavier parts remaining after the evaporation of naphtha in open air are known under the name of *khluk*, and when mixed with sand give an excellent waterproof cement, sometimes used by natives for irrigation canals. There are also mines of mountain-wax on the Kok-tube Mountain, in the district of Namangan, and a very good mine of sulphur at Karim-duvany.

M. DOMOJROFF continues to publish in the *Izvestia* of the Russian Geographical Society his anemometric observations on board the clipper *Djighit*. In June, 1881, during the cruise from the Zond Strait to the Seychelles Islands, he met mostly with south-east winds, the velocity of which varied from 3 to 7.5 metres per second, with one exception, on June 9, when it

reached 15 metres. On the cruise from the Seychelles to Aden, from June 25 to 30, the wind was mostly south-west, and varied from 5 to 12.7, reaching 14.3 metres per second on June 29. The observations are carried on in the same way as was described in a preceding number of NATURE.

THE young West Siberian branch of the Russian Geographical Society proposes to publish in its next volume of *Memoirs* a botanical description of the district of Tara, which has the interest of having an intermediate flora between the forest region and the Steppes, the Irtysh being a boundary-line between the two. The same Society continues the excavation of several kooorgans in the district of Yalutorovsk.

FROM various parts of the Greek Archipelago and from the Pelikon district continued volcanic phenomena are reported. The neighbourhood of Volo in Thessaly is particularly affected. Also the island of Chios seems again to be a centre of disturbance. The volcano at Santorin is very active.

ON February 16, at 8.10 a.m., a slight earthquake was noted at Bologna and the whole Southern Romagna. Mount Vesuvius increased its activity on that occasion.

A DISCOVERY, which is expected to throw some light on prehistoric times in what is now Germany, has been made near Andernach on the Rhine. Remains of prehistoric animals have been found in a pumice-stone pit, and Prof. Schaaffhausen of Bonn has investigated the spot closely. A lava-stream underlying the pumice-stone was laid bare, showing a width of only two metres. The crevices between the blocks of lava were filled with pumice-stone to a depth of one-half to one metre; below this, however, there was pure loam and clay, and in this were found numerous animal bones, apparently broken by man, as well as many stone implements. It is supposed that there was a settlement there, of which the food-remains fell into the lava-crevices before the whole was covered with pumice-stone.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Miss Annie M. Davis; an Ocelot (*Felis pardalis*) from South America, presented by Mrs. A. Harley; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Miss G. Gordon Clark; a Black Rat (*Mus rattus*), British, presented by Mr. H. B. Stott; a Tawny Eagle (*Aquila nevioides*) from South Africa, presented by Mr. Roland Trimen, F.Z.S.; a Slender-billed Cuckoo (*Licmetis tenuirostris*) from South Australia, presented by Mr. A. Anderson; a Common Magpie (*Pica rustica*), British, presented by Mr. Charles Davis; a Ring-necked Parrakeet (*Puleornis torquatus*) from India, presented by Miss Bibby; a Common Curlew (*Numenius arquata*), a Golden Plover (*Charadrius pinnularis*), British, purchased.

OUR ASTRONOMICAL COLUMN

THE COMET 1883 a.—In a circular issued from the Imperial Academy of Sciences, Vienna, are the following elements of a comet discovered at Rochester, N.Y., on the 23rd ult., founded by Dr. Hepperger upon observations on February 24, 25, and 26.

Perihelion passage, February 20.20206 M.T. at Berlin.

Longitude of perihelion	$33^{\circ} 23' 51''$	} M. Eq. 1882.0.
" ascending node	$280^{\circ} 4' 20''$	
Inclination	$77^{\circ} 32' 48''$	
Logarithm of perihelion distance	9.879124	
Motion—direct.			

Prof. Millosevich kindly communicates observations made at the Collegio Romano in Rome:—

	Rome M.T.			R.A.			Decl.		
	h.	m.	s.	h.	m.	s.	h.	m.	s.
Feb. 28	7	43	12	...	23	43	19	58	...
March 1	7	53	14	...	23	53	12	27	...